IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES
(Attorney Docket No. 08-1411-US)

In re Application of:	)
	)
Richard Douglas Schultz *et al.*	) Confirmation Number: 9023
	)
Serial No.: 10/625,799	) Art Unit: 2456
	)
Filed: July 23, 2003	) Examiner: Kevin T. Bates
	)
Title: Method for Mitigating Adverse	)
Processor Loading in a Personal	)
Computer Implementation of a	)
Wireless Local Area Network	)
Adapter	)

AMENDED APPEAL BRIEF

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II. Table of Authorities

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III. Real Party in Interest

The real party in interest is Xocyst Transfer AG L.L.C., to which this invention is assigned.

IV. Related Appeals and Interferences

Applicants are not aware of any related appeals or interferences.

V. Status of Claims

Claims 1, 2, 4–8, 15–22, and 24–26 are pending. Claims 1, 2, 4–8, and 15–20 stand allowed, claims 3, 9–14, and 23 were previously canceled, and claims 21–22 and 24–26 stand rejected. Applicants appeal the rejection of claims 21–22 and 24–26. A clean set of the appealed claims is set forth in the Claims Appendix beginning at page 17.

VI. Status of Amendments

No amendments were filed subsequent to the final office action mailed March 24, 2009.

VII. Summary of Claimed Subject Matter

Of the currently rejected claims, claim 21 is independent and claims 22 and 24–26 are dependent therefrom. Claim 21 is directed to a system that comprises: (a) means for measuring a current central processor unit (CPU) load by measuring an interrupt latency, *e.g.*, (Specification, p. 10, line 6 through p. 11, line 1; p. 12, line 1 through p. 13, line 10); *see also* (Figure 3.0, #302, #302b), (b) means for determining that the current CPU load exceeds a predetermined threshold, *e.g.*, (Specification, p. 10, lines 6–18; p. 12, line 1 through p. 13, line 4); *see also* (Figure 3.0, #302, #302b), (c) means for, responsive to determining that the current CPU load exceeded the

predetermined threshold, entering a power save mode by setting a Power Save (PS) bit in a frame control word, thereby signaling a communications system transmitter to inhibit packet transmission and packet reception, *e.g.* (Specification, p. 10, lines 6–18; p. 11; lines 9–17; p. 13, lines 12–19); *see also* (Figure 3.0, #302, #302b), (d) means for monitoring the CPU load while the communication system transmitter is inhibited, *e.g.*, (Specification, p. 10, line 6 through p. 11, line 17; p. 12, line 1 through p. 13, line 10); *see also* (Figure 3.0, #302, #302b), (e) means for determining that the monitored CPU load is below the predetermined threshold, *e.g.*, (Specification, p. 10, lines 6–18; p. 12, line 1 through p. 13, line 4); *see also* (Figure 3.0, #302, #302b); and (f) means for, responsive to determining that the monitored CPU load is below the predetermined threshold, signaling the communications system transmitter to begin transmitting packets, wherein the signaling clears the PS bit, *e.g.*, (Specification, p. 10, lines 6–18; p. 11, lines 9–17; p. 13, line 12 through p. 14, line 2); *see also* (Figure 3.0, #302, #302b).

VIII.   Grounds of Rejection to be Reviewed on Appeal

Whether claims 21–22 and 24–26 are unpatentable under 35 U.S.C § 101 (2006) as being directed to non-statutory software *per se*.

IX. Argument

A. Rejection of Claims 21–22 and 24–26 Under 35 U.S.C. § 101

1. Summary of the Argument

The Examiner rejected claims 21–22 and 24–26, of which claim 21 is independent, under 35 U.S.C. § 101 (2006) as being directed to non-statutory subject matter—specifically, software *per se.* Applicants submit that the broadest reasonable interpretation of these claims is not software *per se.* Rather, the means-plus-function limitations of the rejected claims, when properly construed under 35 U.S.C. § 112, ¶ 6 (2006), necessarily include hardware structures (such as a programmed computer or processor) that perform the recited functions, and therefore the claims recite statutory subject matter and not software *per se.*

The Examiner's broad claim interpretation is not reasonable because it is contrary to established Federal Circuit precedent that sets forth the manner in which means-plus-function limitations are to be construed. The Examiner's claim interpretation impermissibly excludes portions of the corresponding structure that perform the recited functions. In a means-plus-function claim in which the disclosed structure is a computer, or microprocessor, programmed to carry out an algorithm, the disclosed structure is the special purpose computer programmed to perform the disclosed algorithm. *WMS Gaming Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1349, 51 U.S.P.Q.2d (BNA) 1385, 1391 (Fed. Cir. 1999). Additionally, the corresponding structure of a means-plus-function limitation must actually perform the recited function. *Asyst Techs. Inc. v. Empak Inc.*, 268 F.3d 1364, 1371, 60 U.S.P.Q.2d (BNA) 1567, 1572–73 (Fed. Cir. 2001). Moreover, it is improper when making a § 101 determination to ignore limitations of the claim or corresponding structures in the specification which cause the claim to recite statutory subject matter. *See In re Alappat*, 33 F.3d 1526, 1540–42, 1544–45, 31 U.S.P.Q.2d 1545, 1554–55, 1558 (Fed. Cir. 1994) (en banc); *In re Noll*, 545 F.2d 141, 147, 191 U.S.P.Q. (BNA) 721, 725

(C.C.P.A. 1976). The Examiner's claim interpretation is unreasonable because it excludes the host CPU and other physical structure disclosed in Applicants' specification which are used to perform the recited functions.

Furthermore, means-plus-function claims are not rendered non-statutory simply because the specification describes the corresponding algorithm in terms of software *per se* or other non-statutory subject matter. *Finisar Corp. v. DirecTV Group Inc.*, 523 F.3d 1323, 1340, 86 U.S.P.Q.2d (BNA) 1609, 1623 (Fed. Cir. 2008) ("This court permits a patentee to express [the] algorithm [for computer-implemented means-plus-function claims] in any understandable terms including as a mathematical formula, in prose, or as a flow chart, or in any other manner that provides sufficient structure."). The Examiner erred by rejecting the claims on the basis that Applicants' specification describes, but does not claim, unpatentable software *per se*.

Therefore, Applicants submit that the rejected claims are directed to statutory subject matter and not software *per se*, and respectfully request that the Board reverse the Examiner's § 101 rejection.

2. The Examiner's rejection

Applicants appeal the Examiner's rejection of claims 21–22 and 24–26, of which claim 21 is independent. The Examiner rejected the claims under 35 U.S.C. § 101 (2006) as being directed to non-statutory subject matter in the Office action mailed October 10, 2008, and again in the Office action mailed March 24, 2009. The Examiner provided the following reasoning for the rejection:

> Claim 21 is directed towards a system with means plus function steps. A system can include both hardware and software embodiments and claim 17 shows that the means for performing the listed steps can be digital logic or software steps. Having a "processing means" only limits the means to those for performing a

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process and as shown from the specification it is digital logic or software that performs the described process. Software is not considered one of the four statutory classes thus the claim is directed towards non-patentable subject matter.

Applicants' argued in the February 6, 2009 Office action response that the Examiner's interpretation of the means-plus-function claims was improper, but the Examiner disagreed:

> The applicant asserts that the means plus function limitation includes the underlying hardware structure as described in the specification. The examiner disagrees with that interpretation. The actual means for performing the listed functional steps is executable software code. That code, when executed on a general purpose computer would perform the listed functions of the claim. The invention as claimed does not positively recite actual performance of those functions, thus does not require the hardware listed to execute the code, nor the hardware listed in the functional steps (i.e. the CPU, communications system transmitter). Since each means plus function limitation is only executable code, the invention as recited is software per se.

Finally, the Examiner suggested that *WMS Gaming Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 51 U.S.P.Q.2d (BNA) 1385, 1391 (Fed. Cir. 1999), and other cases regarding the proper interpretation of means-plus-function limitations are not relevant to a § 101 determination:

> The examiner notes the applicant cited case law, but asserts that none of those cited cases are directed toward the concept that 35 USC § 101 rejection for software per se on a claim with functional limitations is improper interpretation under 35 USC § 112 6th paragraph.

Applicants filed a notice of appeal on June 24, 2009.

3. The Examiner Erred in Rejecting Claims 21-22 and 24-26 As Being Directed to Non-Statutory Subject Matter

a. The rejected means-plus-function claims recite statutory subject matter because the corresponding structure includes a computer programmed to perform the recited functions pursuant to software instructions

The Examiner's construction of the means-plus-function claims improperly excludes the corresponding hardware structures that perform the recited functions. The corresponding structure of a computer-implemented means-plus-function claim is not the software algorithm disclosed in the specification, but is instead the computer or microprocessor programmed to carry out the disclosed software algorithm. *In re Alappat*, 33 F.3d 1526, 1544–45, 31 U.S.P.Q.2d 1545, 1558 (Fed. Cir. 1994) (en banc). In *Alappat*, the claim at issue read:

> 15. A rasterizer for converting vector list data representing sample magnitudes of an input waveform into anti-aliased pixel illumination intensity data to be displayed on a display means comprising:
>
> (a) means for determining the vertical distance between the endpoints of each of the vectors in the data list;
>
> (b) means for determining the elevation of a row of pixels that is spanned by the vector;
>
> (c) means for normalizing the vertical distance and elevation; and
>
> (d) means for outputting illumination intensity data as a predetermined function of the normalized vertical distance and elevation.

Id. at 1538–39. The Federal Circuit, sitting *en banc*, held that claim 15 recited patentable subject matter. *Id.* at 1541–42, 1544–45.

First, the Federal Circuit held that the corresponding structure of a computer-implemented mean-plus-function limitation includes the hardware structures for performing the

recited function. "[A] general purpose computer programmed to carry out the claimed invention . . . creates a new machine, because a general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software." *Id.* at 1544–45; *see also WMS Gaming Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1349, 51 U.S.P.Q.2d (BNA) 1385, 1391 (Fed. Cir. 1999) ("In a means-plus-function claim in which the disclosed structure is a computer, or microprocessor, programmed to carry out an algorithm, the disclosed structure is . . . the special purpose computer programmed to perform the disclosed algorithm." (citing *id.* at 1545)). Second, the Federal Circuit held that the "computer operating pursuant to software may represent patentable subject matter, provided, of course, that the claimed subject matter meets all of the other requirements of Title 35." *In re Alappat*, 33 F.3d at 1545.

The Examiner rejected the claims as being directed to non-statutory subject matter because the Examiner improperly construed the claims to exclude hardware structures. The rejected claims are means-plus-function claims, and Applicants' specification discloses, *inter alia*, a "software driver (104a) running on the host CPU (104)." (Specification, p. 6, line 21 through p. 7, line 22); *see also* (Figure 3.0, #302, #302b). However, contrary to the rule in *In re Alappat*, the Examiner improperly excluded the host CPU and other hardware structures from the scope of the means-plus-function limitations, and thus improperly concluded that the claims were directed to non-statutory software *per se*.

Additionally, Applicant notes the similarity of the rejected claims with those claims found to recite patentable subject matter in *In re Alappat*. Like Alappat's claim 15, each of the limitations in the body of rejected claim 21 begin with "means for" and do not recite sufficient structure which would bring the limitations outside the scope of § 112, ¶ 6. And similar to

Alappat's specification, Applicants' specification discloses software running on a host CPU.

Because the claims found to recite statutory subject matter in *In re Alappat* are similar to the

rejected claims, Applicants submit that the rejected claims recite statutory subject matter.

Finally, the Examiner improperly disregarded controlling Federal Circuit decisions

regarding the proper interpretation of computer-implemented means-plus-function limitations.

Applicants quoted *WMS Gaming* and other cases regarding the proper interpretation of means-

plus-function limitations in the February 6, 2009 Office action response, but the Examiner

"assert[ed] that none of those cited cases are directed toward the concept that 35 USC § 101

rejection for software per se on a claim with functional limitations is improper interpretation

under 35 USC § 112 6th paragraph." However, "USPTO personnel must first determine the

scope of a claim by thoroughly analyzing the language of the claim before determining if the

claim complies with each statutory requirement for patentability." MPEP § 2106 (emphasis in

original). Before rejecting claim 21 as being directed to software *per se*, the Examiner was

required to apply the controlling law for determining the scope of a means-plus-function

limitation. *WMS Gaming* and other cases hold that the corresponding structure of Applicants'

claims is not software *per se*, but instead also includes hardware structures.

> **b. Software *per se* does not fall within the scope of the means-plus-function limitations of the rejected claims because the structure corresponding to the recited function must actually perform the function, and because software *per se* is incapable of performing a function**

The Examiner's construction of the means-plus-function claims improperly excludes "an

essential part of the structure required to perform the function[s]" recited in the claims.

Globetrotter Software Inc. v. Elan Computer Group Inc., 236 F.3d 1363, 57 U.S.P.Q.2d (BNA)

1542, 1545–46 (Fed. Cir. 2001). It is well established that the structure corresponding to a

function recited in a means-plus-function limitation *must actually perform* the recited function.

E.g., Default Proof Credit Card Sys. Inc. v. Home Depot U.S.A. Inc., 412 F.3d 1291, 75

U.S.P.Q.2d (BNA) 1116, 1121 (Fed. Cir. 2005); *Cardiac Pacemakers Inc. v. St. Jude Med. Inc.*,

296 F.3d 1106, 63 U.S.P.Q.2d (BNA) 1725, 1730 (Fed. Cir. 2002); *Asyst Techs. Inc. v. Empak

Inc.*, 268 F.3d 1364, 60 U.S.P.Q.2d (BNA) 1567, 1572–73 (Fed. Cir. 2001); *Globetrotter

Software*, 57 U.S.P.Q.2d at 1545–46.

Yet software *per se*—that is, software disembodied from any particular physical

structure—is incapable of performing a function (and thus is nonstatutory). MPEP § 2106.01

("[C]omputer programs claimed as computer listings *per se* . . . do not define any structural and

functional interrelationships between the computer program and other claimed elements of a

computer which permit the computer program's functionality to be realized."). In contrast to

software *per se*, software embodied in a physical structure, such as a computer-readable medium

or a computer memory, is functional because the physical structure allows the functionality of

the software to be realized, and thus is statutory. *Id.* ("In contrast [to computer programs

claimed as computer listings *per se*], a claimed computer-readable medium encoded with a

computer program is a computer element which defines structural and functional

interrelationships between the computer program and the rest of the computer which permit the

computer program's functionality to be realized, and is thus statutory.").

A closer examination of the rejection reveals the fundamentally flawed logic: the claims

were construed to exclude those structures that are necessary to perform the recited functions,

and then were rejected on the basis that the recited system is incapable of performing the recited

functions. As explained above, however, Applicants' specification discloses physical structure

that allows the functionality of the software to be realized, and contrary to the settled rule of

Asyst Technologies, Cardiac Pacemakers, Globetrotter Software, and MPEP § 2106.01, the

Examiner construed the means-plus-function claims to exclude those structures. Instead, the Examiner improperly construed the claims to recite software *per se*, the functionality of which cannot be realized without a corresponding hardware structure. MPEP § 2106.01.

c. The Examiner improperly excluded corresponding structure of the means-plus-function limitations when making a § 101 determination

When construing the rejected means-plus function claims, the Examiner improperly ignored the corresponding physical structure which brings the claims with the scope of statutory subject matter. *In re Alappat*, 33 F.3d 1526, 1540–42, 1544–45, 31 U.S.P.Q.2d 1545 (Fed. Cir. 1994) (en banc); *In re Noll*, 545 F.2d 141, 147, 191 U.S.P.Q. (BNA) 721, 725 (C.C.P.A. 1976). The Federal Circuit in *In re Alappat* held that it was error to ignore the apparatus limitation and corresponding physical structure of the rejected means-plus-function claims and to construe the claims as unpatentable process claims. 33 F.3d at 1540–42, 1544–45. Alappat's independent claim 15, quoted above, recited a "rasterizer for converting vector list data," and each limitation following the preamble began with the phrase "means for." *Id.* at 1538–39. Yet the Examiner and the Board construed the claim as "nothing more than a process claim." *Id.* at 1539–40. The Federal Circuit noted that the corresponding structure for each of the recited functions could be a general purpose computer, *id.* at 1541, 1544–45, and held that claim 15 "unquestionably recites a machine, or apparatus, made up of a combination of known electronic circuitry elements." *Id.* at 1541. Therefore, "[b]ecause claim 15 is directed to a 'machine,' which is one of the four categories of patentable subject matter enumerated in *§ 101*, claim 15 appears on its face to be directed to *§ 101* subject matter." *Id.* at 1542. Therefore, in making a § 101 determination, it is improper to ignore claim limitations and corresponding structure that bring the claim within one of the four categories of patentable subject matter. *Id.* at 1540–42, 1544–45.

Additionally, the Court of Customs and Patent Appeals in *In re Noll* held that it is improper for Examiners to "extract that part of the claimed invention which they deem to be novel and test only that part to determine whether it belongs to one of the statutory classes of patentable subject matter." 545 F.2d at 147. Further, in making a § 101 determination, it is "irrelevant to a rejection under 35 USC 101" that an Applicant (or an Examiner) "perceives [the] invention, in fact to lie in the computer program disclosed" in the Applicant's specification, when the claims as a whole recite an apparatus and not a program. *Id.*

Contrary to the rule in *In re Alappat*, the Examiner ignored the corresponding physical structure of the rejected means-plus function claims which bring the claims within one of the four categories of patentable subject matter. Namely, the Examiner ignored the hardware structures disclosed in Applicants' specification, including the "host CPU" that executes the "software driver," which bring the claims within the "machine" category of patentable subject matter under § 101. Additionally, contrary to the rule in *In re Noll*, the Examiner improperly extracted part of the claimed invention and tested only that part to determine whether it belongs to one of the statutory classes of patentable subject matter. More specifically, the Examiner improperly seized on Applicants' description of a "software driver" in the specification, even though the specification explains that the host CPU executes the software driver. It is irrelevant to a rejection under § 101 that the Examiner perceives the invention to lie with the disclosed software driver, because the means-plus-function claims, properly construed, include the corresponding hardware structures, and thus recite patentable subject matter. *In re Noll*, 545 F.2d at 147.

d. The Examiner's interpretation of § 112, ¶ 6 would eviscerate the rule that the corresponding structure of a computer-implemented means-plus-function limitation can be expressed using nonstatutory subject matter

The Examiner erred by rejecting the recited means-plus-function claims on the basis that Applicants' specification describes unpatentable software *per se*. A means-plus-function claim recites statutory subject matter even though the functions of the claim may be described in the specification using nonstatutory subject matter. *Finisar Corp. v. DirecTV Group Inc.*, 523 F.3d 1323, 1340, 86 U.S.P.Q.2d (BNA) 1609, 1623 (Fed. Cir. 2008) ("This court permits a patentee to express [the corresponding] algorithm [of a computer-implemented means-plus-function claim] in any understandable terms including as a mathematical formula, in prose, or as a flow chart, or in any other manner that provides sufficient structure." (citations omitted)). An algorithm, mathematical formula, flowchart, or prose *per se* is nonstatutory subject matter. *Diamond v. Diehr*, 450 U.S. 175, 186, 209 U.S.P.Q 1 (1981) ("[A]n algorithm, or mathematical formula, is like a law of nature, which cannot be the subject of a patent."). Yet the corresponding structure of a computer-implemented means-plus-function limitation is not interpreted to be just the algorithm, formula, flowchart, or prose *per se*, but instead must be interpreted to also include the physical structure, such as a computer, necessary for performing the steps of the algorithm, formula, flowchart, or prose. *Finsair*, 523 F.3d at 1340.

Similar to a formula, flowchart, or prose, software *per se* is nonstatutory subject matter. MPEP § 2106.01 ("[C]omputer listings *per se*" are "the descriptions or expressions of the programs, [and] are not physical 'things.'"). Yet the corresponding structure of a computer-implemented means-plus-function limitation is not interpreted to be software *per se*, just as the corresponding structure is not interpreted to be just the disclosed algorithm, formula, flowchart,

or prose *per se*, but is instead interpreted to also include that structure necessary for permitting the functionality of the software to be realized. *See id.*; *Finsair*, 523 F.3d at 1340.

The import of the Examiner's rejection is that a claim containing means-plus-function limitations is unpatentable if the specification discloses nonstatutory subject matter such as software *per se*. Software or "computer listings" *per se* do not differ in any relevant respect from formulas, flowcharts, or prose. All of these are nonstatutory when recited without any physical structure that permits their functionality to be realized. *See Diehr*, 450 U.S. at 186; MPEP § 2106.01. However, the Federal Circuit explicitly permits the corresponding structure of a computer-implemented means-plus-function limitation to be described using nonstatutory matter, including formulas, flowcharts, or prose. *Finsair*, 86 U.S.P.Q.2d at 1623. To sustain the Examiner's rejection would be to overrule a long line of cases that permit the functionality of a means-plus-function limitation to be described using nonstatutory matter, including algorithms, formulas, flowcharts, prose, and (in this case) software *per se*. *E.g.*, *id.*; *Aristocrat Techs. Austl. Pty Ltd. v. Int'l Game Tech.*, 521 F.3d 1328, 1332–33, 86 U.S.P.Q.2d (BNA) 1235, 1239–40 (Fed. Cir. 2008); *WMS Gaming Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1349, 51 U.S.P.Q.2d (BNA) 1385, 1391 (Fed. Cir. 1999); *In re Alappat*, 33 F.3d 1526, 1540–42, 1544–45, 31 U.S.P.Q.2d 1545, 1554–55, 1558 (Fed. Cir. 1994) (en banc).

4. Conclusion

Applicants submit that the rejected claims do not recite software *per se*, but instead recite statutory subject matter. Accordingly, Applicants respectfully request that the Board reverse the Examiner's rejection.

X.   Claims Appendix

21.   A system, comprising:

means for measuring a current central processor unit (CPU) load by measuring an interrupt latency;

means for determining that the current CPU load exceeds a predetermined threshold;

means for, responsive to determining that the current CPU load exceeded the predetermined threshold, entering a power save mode by setting a Power Save (PS) bit in a frame control word, thereby signaling a communications system transmitter to inhibit packet transmission and packet reception;

means for monitoring the CPU load while the communication system transmitter is inhibited;

means for determining that the monitored CPU load is below the predetermined threshold; and

means for, responsive to determining that the monitored CPU load is below the predetermined threshold, signaling the communications system transmitter to begin transmitting packets, wherein the signaling clears the PS bit.

22.   The system of claim 21, wherein the monitoring the CPU load is performed by a background task.

24.   The system of claim 21, further comprising means for signaling the communications system transmitter to transmit a frame during the power save mode.

25.   The system of claim 21, wherein the communications system is wireless.

26.   The system of claim 21, wherein the communications system is at least one of: an IEEE 802.11 wireless local area network (WLAN); a Bluetooth system; and an IEEE 802.15 wireless personal area network (PAN).

XI. Evidence Appendix

None

XII. Related Proceedings Appendix

None

Respectfully submitted,

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